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REMARKS

Applicants have amended claims 1, 4, 6, 20, 24, and 26, and canceled claims 3, 5, 25 and 27. Attached hereto is a marked-up version of the changes being made by the current amendment.

Applicant asks that claims 1, 2, 4, 6-24, 26, and 28-34 be examined. Please apply any charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: \_\_\_\_\_

*Apr. 25, 2001*

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Version with markings to show changes made

In the claims:

Claims 3, 5, 25 and 27 have been cancelled.

Claim 1 has been amended as follows:

1. (Amended) An optical compensating apparatus comprising:  
a polarization controller configured to receive an optical signal propagating through an optical medium, determine the principal states of polarization of the optical medium, determine a magnitude of time delay between the principle states of polarization, and transform the optical properties of the optical signal based on the principal states of polarization, wherein the polarization controller comprises a central processing unit programmed to monitor the time averaged state of polarization of the optical signal and determine the principle states of polarization of the optical medium and the magnitude of time delay between the principle states of polarization based on the time averaged state of polarization.

Claim 4 has been amended as follows:

4. (Amended) The apparatus of claim [3] 1, wherein the central processing unit analyzes time averaged states of polarization via the relationship,  $DOP = |\vec{r}_k| = \frac{1 - |\vec{a}|^2}{|\vec{r}_k - (\vec{a} \cdot \hat{r}_k)\vec{a}|}$ , to determine the principle states of polarization by calculating the vector  $\vec{a}$ .

Claim 6 has been amended as follows:

6. (Amended) The apparatus of claim [3] 1, wherein the central processing unit is further programmed to determine the relative order, in time, of the principle states of polarization.

Claim 20 has been amended as follows:

20. (Amended) An optical compensating apparatus for reducing PMD in an optical signal transmitted through an optical medium, the apparatus comprising:

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a polarization module configured to receive an optical signal propagating through the optical medium, determine the principal states of polarization of the optical medium, determine a magnitude of time delay between the principle states of polarization, and generate a signal for transforming the polarization of the optical signal; and

an optical transformer arranged in an optical path of the medium after the polarization module and configured to transform the optical signal and reduce a time delay between the principle states of polarization based on the signal received from the polarization module.

Claim 24 has been amended as follows:

24. (Amended) A method of reducing PMD of an optical signal propagating in an optical medium, the method comprising:

determining the principal state of polarizations of the optical medium with a polarization controller,

determine a magnitude of time delay between a first principle states of polarization and a second principal state of polarization with the polarization controller, and

transforming the polarization of the optical signal with a polarization transforming device based on the polarization of the principal states of polarization.

Claim 26 has been amended as follows:

26. (Amended) The method of claim [25] 24 further comprising delaying the first principal state of polarization with respect to a second principal state of polarization.

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